

ABSTRACT

A structure that allows both axial and radial alignment between a laser diode and optical fiber to be achieved in a single attachment process. The structure incorporates an optics tube, fiber holder, laser diode and heat sink. The fiber holder is affixed to the inside surface at one end of the optics tube and retains a segment of fiber in axial alignment with and close proximity to the laser diode. The heat sink is placed into the opposite end of the optics tube and serves to draw energy in the form of heat away from the laser diode. The laser diode is powered via an electrical lead that attaches to a metalized ceramic substrate located between the laser diode and the heat sink. The symmetrical design of the structure is rigid and substantially insensitive to thermal and mechanical stresses that cause misalignment in planar designs of similar dimensional proportion. The optics tube and heat sink elements of the structure are substantially cylindrical in shape to allow high precision parts, as the heat sink and optics tube are easily turned and abrasively finished using standard machining equipment.

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